

## **AMENDMENTS TO THE CLAIMS:**

### **Complete Listing of Claims**

Claims 1-13 (Canceled)

Claim 14. (Currently amended) An audio compensation system for producing a sound compensated output signal, comprising:

a volume control circuit for producing a volume-adjusted signal by applying a volume adjustment to an audio signal in response to a volume setting, wherein the sound compensated output signal is responsive to the volume-adjusted signal;  
and

circuitry for producing an amplified signal by amplifying a selected bandwidth of signals in response to the volume setting, wherein the sound compensated output signal is also responsive to the amplified signal, wherein the circuitry for producing an amplified signal comprises:

a logarithm estimating circuit for receiving a value in response to the volume setting and outputting a first estimated signal;

circuitry for modifying the first estimated signal to form a modified signal; and

an inverse logarithm estimating circuit for receiving the modified signal and outputting a second estimated signal,

wherein:

the sound compensation output signal is responsive to the second estimated signal, wherein the logarithm estimating circuit is a base 2 logarithm estimating circuit;

the inverse logarithm estimating circuit is a base 2 inverse logarithm estimating circuit, wherein the circuitry for modifying the first estimated signal

comprises circuitry for modifying the first estimated signal according to a linear modification; and ~~The system of claim 13 wherein~~

the linear modification is in response to an adjustable slope value and an adjustable offset value.

Claim 15. (Canceled)

Claim 16. Currently amended) An audio compensation system for producing a sound compensated output signal, comprising:

a volume control circuit for producing a volume-adjusted signal by applying a volume adjustment to an audio signal in response to a volume setting, wherein the sound compensated output signal is responsive to the volume-adjusted signal;  
and

circuitry for producing an amplified signal by amplifying a selected bandwidth of signals in response to the volume setting, wherein the sound compensated output signal is also responsive to the amplified signal, wherein the circuitry for producing an amplified signal comprises:

a logarithm estimating circuit for receiving a value in response to the volume setting and outputting a first estimated signal;

circuitry for modifying the first estimated signal to form a modified signal; and

an inverse logarithm estimating circuit for receiving the modified signal and outputting a second estimated signal,

wherein:

the sound compensation output signal is responsive to the second estimated signal,

the circuitry for modifying the first estimated signal comprises circuitry for modifying the first estimated signal according to a linear modification, and ~~The system of claim 15 wherein~~

the linear modification is in response to an adjustable slope value and an adjustable offset value.

Claims 17-30 (Canceled)

Claim 31. (Currently amended) A method of operating an audio compensation system to produce a sound compensated output signal, comprising the steps of:

applying a volume adjustment to an audio signal in response to a volume setting from a volume control circuit, wherein the sound compensated output signal is responsive to the volume-adjusted signal; and

producing an amplified signal by amplifying a selected bandwidth of signals in response to the volume setting, wherein the sound compensated output signal is also responsive to the amplified signal, wherein the producing step comprises:

receiving a value in response to the volume setting and forming an estimated logarithm signal;

modifying the estimated logarithm signal to form a modified signal;

and

receiving the modified signal and forming an inverse logarithm estimated signal,

wherein:

the sound compensation output signal is responsive to the inverse logarithm estimated signal,

the modifying step comprises modifying the estimated logarithm signal according to a linear modification, and ~~The method of claim 30 wherein~~

the linear modification is in response to an adjustable slope value and an adjustable offset value.

Claim 32. (Canceled)